

**Se Technical Sub Committee  
February Meeting**

**February 12, 2020  
12:30p – 2:00p PST / 1:30p – 3:00p MST**

In attendance: Sheldon Reddekopp (BC ENV co-chair), Lauren Sullivan (MT DEQ co-chair), Joe Beaman (US EPA), David DeForest (Windward Env.), Karen Jenni (USGS), Heather McMahon (KNC), Erin Sexton (CSKT), Jesse Sinclair (KNC), Joe Skorupa (US FWS); Michel Ryan-Aylward (BC ENV), Bill Arling (North Coal), Amy Clark (US EPA), Jason Gildea (US EPA), Sara Eldridge, Karly Harker (BC ENV), Myla Kelly (MT DEQ), Karen Kesler (US EPA), Jessica Penno (BC ENV), Kevin Rieberger (BC ENV), Trevor Selch (MT FWP)

**Meeting Summary**

Co-chairs reviewed the agenda and provided a list of recent updates to the wiki site.

**Recap on Model/Policy decisions**

Lauren Sullivan (MT DEQ) reviewed where we are at in the process of making key modeling and policy decisions. The five alternative levels of protection have been finalized. A draft list of target fish species for modeling has been completed. In future calls there will be discussion around trophic transfer factor's (TTF's) and enrichment factors (EF's/ Kd's).

**Tables – Criteria for target fish species selection and fish spawning windows**

Sheldon Reddekopp (BC ENV) provided recent updates on the table outlining criteria for selecting target fish species for modeling. This table was drafted following the November face-to-face meeting. The recent updates incorporated SeTSC comments provided during the January SeTSC teleconference and through SeTSC email correspondence. The table was displayed and it was noted that this table is a working draft with additional recommendations and updates to be included. SeTSC members are encouraged to provide additional recommendations on how this table can be improved.

- Karen Jenni (USGS) suggested adding a legend for each column for clarity on the color scheme. **(Action)**
- Jesse Sinclair (KNC) agreed with Karen about adding clear definitions.
- Trevor Selch (MT FWP) asked if the hashed cells indicated less than 20 data points was for each site?
  - Sheldon clarified that the hashed cells indicate less than 20 data points total across all sites and all years.
- Joe Skorupa (USFWS) asked why whole body and muscle tissue are combined into one column yet defined by the legend with the color scheme based upon the whole body EPA criteria and the BC guideline? He recommended to separate into two columns.
  - Jesse Sinclair commented on his original suggestion to separate the previous column “bioaccumulation” into two columns “egg/ovary” and “muscle/whole body” to separate reproductive effects for individual species from evaluating selenium burden for protection of wildlife or human consumers. There was general agreement to separate the column into two. **(Action)**
- Sheldon noted that reidside shiner shows the highest Se concentrations in the egg/ovary column while the peamouth chub shows higher Se concentrations than shiners in the muscle/whole body column. Co-chairs asked the SeTSC to review this table and provide feedback with the goal of finalizing the list for target fish species for modeling.

- SeTSC members briefly discussed conversion factors (CF's) and calculating site-specific CF's. Joe Skorupa recommended including any paired data from downstream Kootenai River datasets.
  - SeTSC co-chairs committed to compiling and sharing paired data for the SeTSC to review. **(Action)**
- Co-chairs displayed a table provided by Trevor Selch to the co-chairs following the January SeTSC call. This table includes reservoir fish species, their spawning times, the collection date (for MT sampling), and a column indicating whether these sampling dates occurred less than 6 weeks post vitellogenesis. Sheldon noted that the displayed table does not include Teck sampling dates and it may be that some of the fish species sampled by Teck in Feb/March may fall outside of the 6-week post vitellogenesis window. Co-chairs committed to updating the table to include Teck sampling dates. **(Action)**
- Trevor clarified this is a working table and not meant to be considered final. It was created following the January SeTSC when Joe Skorupa commented on the importance of using data from ripe eggs. Trevor clarified the kokanee spawning window noted on the table is wide, but that MT Fish Biologist Jim Dunnigan provided local insight and confidence that the spawning time is late September which would mean the samples were collected within the 6-week window.
- Joe Skorupa asked Trevor if he had any information on tapeworm infestation in the fish samples collected?
  - Trevor responded that MT FWP has seen tapeworm in most cyprinid samples (peamouth chub, redbase shiner, and northern pikeminnow).
- Joe S. expressed concern that tapeworms may suppress hormone production. This suggests that perhaps the egg/ovary data for those infested fish may not be appropriate to use because infested fish, even during spawning times, may not have developed ovaries. Joe suggested looking at the gonadosomatic index (GSI) in addition to looking at collection date and spawning dates. Joe noted that none of this matters if we have egg data rather this is only of concern if we only have ovary data. He suggested a criteria be developed for what ovary data is accepted or rejected and suggested both sampling date and GSI be included in that evaluation. Joe noted that the literature suggests this is limited to cyprinids which is consistent with what MT FWP has seen in the fish samples.
- Co-chairs committed to updating the fish spawning table to include the number of data points for eggs and documentation and/or literature references for the appropriate post vitellogenesis collection window, and calculating the GSI where possible. **(Action)**

### Defining Food Webs

- Sheldon walked the group through some slides to help facilitate the conversation around defining the food web for each modeled fish species. Displayed was the Lotic food web figure 3 different ways. First, the original color coded food web that has been previously displayed. Second, the same information displayed in tabular form. Third, the same information displayed in graphical form as a bar chart.
- Jesse noted that there is some literature for redbase shiner and peamouth chub that suggests they will feed on periphyton and phytoplankton. Jesse noted that this may not come through in the gut contents and asked Trevor if he had any insights on that.
  - Trevor responded that MT FWP collected additional data. He confirmed that if the fish fed on periphyton, that may be hard to detect. Trevor said he would review the literature that Jesse will provide. **(Action)**
- Joe S. asked for clarification about the insect classification in this food web.

- Sheldon clarified that there are three distinct insect classifications which include, aquatic insects, terrestrial insects, and insect parts. It was noted that the insect parts classification essentially means unidentified insects.
- Joe S. asked if there is a mollusc pathway?
  - Karen noted the importance of this information.
  - Co-chairs committed to confirming whether or not there is a mollusc pathway. **(Action)**
- Sheldon stressed the importance of confirming what food web data will be used for modeling. Previously the SeTSC has expressed support for using the Lotic food web as it is. It was noted that if any committee members have a strong reason for diverging from this food web, now is the time to bring that information and rationale to the attention of the SeTSC. It will need to be documented, and discussed and agreed upon by the SeTSC.
  - Karen Jenni (USGS) noted that on a previous SeTSC call there was some question about the longnose versus the largescale sucker foodweb. She reiterated the importance to document and discuss any rationale to diverge from the present food web under consideration.
  - Trevor noted Lauren had found some information that largescale suckers do eat zooplankton (as indicated in the food web) and Trevor just wanted to state that based upon the location of their mouths, he has trouble imagining that largescale suckers target zooplankton in the water column. He commented that he thinks this may just be sort of an artifact of being a benthic eater rather than targeting the zooplankton.
- David DeForest (Windward Env.) asked if we have information on the size of the collected in this food web study and if the fish shift their diet over time?
  - Co-chairs committed to following up with information about fish size. **(Action)**
- Sheldon drew the attention of the SeTSC to the low sample size for red side shiner (n=1).
- Sheldon displayed figures that further detailed the bull trout and kokanee food webs, illustrating a complex versus simple food web. He noted that bull trout prey on fish and displayed a breakdown of each of those fish and the food webs of those fish. He highlighted the kokanee food web as an example of simple food web predominantly zooplankton.
- Sheldon noted that when considering prey fish in the food web and target fish species selection that red side shiner has a single sample whereas the peamouth chub has a more robust sample size. He noted that we need to break down food webs like this for each of the target fish species.
- Sheldon asked the SeTSC for their feedback on the best way to move forward on this. For example, do the members want to do this break down for each fish species? Should the co-chairs do this break down and let the SeTSC review it? Is the chart useful? Would members like a “data package” email between calls with data and figures to consider ahead of future calls?
- David DeForest shared an observation that the food web is at a level of detail that is not completely reflective of what the dataset shows in terms of selenium data for the food web. So how do we make those things line up? A possible option is to look at them closely and create dietary estimates, but would be limited in available data, would need to make various assumptions that samples will be representative of parts of the diet.

**Questions/comments from observers** -Trevor noted that he would follow up with Jim Dunnigan (MT FWP) to gather additional information on the tapeworm infestation in samples.

### **Scheduling**

Invites for teleconference calls March–May have been sent. More details to come regarding the summer face-to-face.